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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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09/785,458 02/20/01 HASHIMOTO

S 016907/0935

EXAMINER

WM02/0911

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ART UNIT

PAPER NUMBER

2652

DATE MAILED:

09/11/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.

09/785,458

Applicant(s)

HASHIMOTO ET AL.

Examiner

Brian E. Miller

Art Unit

2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20, 22-23, 26-29, 38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-10 is/are allowed.
- 6) ☒ Claim(s) 11-20, 22, 23, 26-29 and 38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 08/204,676.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>5</u> | 6) <input type="checkbox"/> Other:  |

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This is a Continuation of Reissue application 09/146,222 and claims 1-20, 22-23, 26-29, 38 are now pending.

***Reissue Applications***

1. Applicant is reminded of the continuing obligation under 37 CFR 1.56 to timely apprise the Office of any litigation information, or other prior or concurrent proceeding, involving Patent No. 5,552,949, which is material to patentability of the claims under consideration in this reissue application. This obligation rests with each individual associated with the filing and prosecution of this application for reissue. See MPEP §§ 1404, 1442.01 and 1442.04.
2. The original patent, or an affidavit or declaration as to loss or inaccessibility of the original patent, must be received before this reissue application can be allowed. See 37 CFR 1.178.

***Priority***

3. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in original Letters Patent 5,552,949.

***Response to Amendment***

The preliminary amendment filed on 2/20/01 is informal for the following reason: The reference to the continuation data must be inserted with appropriate underlining as it would be added to the original Patent, i.e., just as new claims are added. Appropriate correction is required.

*Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 11-20, 22, 23, 26-29 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dieny et al (US 5,159,513) in view of Lin et al (US 5,315,468).

With respect to claims 11-14, 17, 22 and 38, Dieny et al shows in FIG. 2 a magnetoresistance effect element including a spin valve having a first ferromagnetic layer 16; second ferromagnetic layer 12; a nonmagnetic spacer layer 14 in between the two ferromagnetic layers; and an antiferromagnetic layer 18. Dieny et al does not show the antiferromagnetic layer being formed of PtMn. Lin et al, however, teaches (col. 8, lines 5-12) an antiferromagnetic layer formed of PtMn for exchange biasing a ferromagnetic layer. The Mn is specified as being in the range of 33-60 atomic %. Lin et al also teaches (col. 8, line 9) the use of PdMn as the antiferromagnetic layer. From these teachings, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided the spin valve of Dieny et al with an antiferromagnetic layer formed of PtMn or PdMn as taught by Lin et al in lieu of NiMn as taught by Dieny et al. The motivation would have been: substituting PtMn or PdMn for NiMn would have been realized by a skilled artisan, since PtMn and PdMn have Neel and blocking temperatures similar to NiMn and have improved corrosive resistance over NiMn (see col. 2, lines 13-36 and col. 8, lines 14-18).

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With regard to claims 15 and 20, Lin et al further teaches (col. 8, lines 14-18) adding Pt or Cr to Ni-Mn films for improved corrosion characteristics. Therefore, It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided the spin valve of Dieny et al with an antiferromagnetic layer formed of PtMnCr or NiMnPt as taught by Lin et al. The motivation would have been: improved corrosion characteristics would have provided longevity to the MR structure.

With regard to claims 16 and 23, Dieny et al in view of Lin et al is silent as to the claimed amounts of Pt and Ni. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided the claimed amounts of Pt and Ni through routine engineering optimization and experimentation, lacking any unobvious or unexpected results, as would have been realized by a skilled artisan.

With regard to claims 26-29, the antiferromagnetic film is substantially free of corrosive pits when it is exposed to an atmosphere having relative humidity of 90%, at a temperature of 90 degrees centigrade for a time duration of 48 hours.

#### *Allowable Subject Matter*

6. Claims 1-10 are allowable over the prior art of record.

#### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian E. Miller whose telephone number is (703) 308-2850. The examiner can normally be reached on M-F 8am-5:30pm (FF off).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4750.



**Brian E. Miller**  
**Primary Examiner**  
**Art Unit 2652**

bem  
August 29, 2001